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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE  
(DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371**

|   |                           |                       |
|---|---------------------------|-----------------------|
| ATTORNEY'S DOCKET NUMBER  |                           |                       |
| BARK118326  |                           |                       |
| U.S. APPLICATION NO. (if known see 37 C.F.R. 1.5)   |                           |                       |
| INTERNATIONAL APPLICATION NO.   | INTERNATIONAL FILING DATE | PRIORITY DATE CLAIMED |
| PCT/GB00/02159  | 14 June 2000              | 14 June 1999          |
| TITLE OF INVENTION  |                           |                       |
| SOLAR TILE ASSEMBLY   |                           |                       |
| APPLICANT(S) FOR DO/EO/US   |                           |                       |
| Peter Edmund Reuben MUCCI; Abubakr Salem BAHAI; Patrick Alexander Bree JAMES;<br>James Robert BALLARD |                           |                       |

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information by **Express Mail**:

- ☒ 1. This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
- ☐ 2. This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 37 U.S.C. 371.
- ☒ 3. This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
- ☐ 4. The U.S. has been elected by the expiration of 19 months from the priority date (PCT Article 31).
- ☒ 5. A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - ☐ a. is attached hereto (required only if not communicated by the International Bureau).
  - ☒ b. has been communicated by the International Bureau.
  - ☐ c. is not required, as the application was filed in the United States Receiving Office (RO/US).
- ☐ 6. An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).

LAW OFFICES OF  
CHRISTENSEN O'CONNOR  
JOHNSON & KINDNESS<sup>PC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
(206) 682-8100

09930471-032602

- X   7. Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
- X       a. are attached hereto (required only if not communicated by the International Bureau).
- b. have been communicated by the International Bureau.
- c. have not been made; however, the time limit for making such amendments has NOT expired.
- d. have not been made and will not be made.
8. An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

**Items 11. to 20. below concern document(s) or information included:**

11. An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98.
12. An assignment document for recording. A separate cover sheet in compliance with 37 C.F.R. 3.28 and 3.31 is included.
- X       13. A FIRST preliminary amendment.
14. A SECOND or SUBSEQUENT preliminary amendment.
15. A substitute specification.
16. A change of power of attorney and/or address letter.
17. A computer-readable form of the sequence listing in accordance with 35 U.S.C. 1.821 – 1.825.
- X       18. A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
- X       20. Other items or information:

Copy of Notification of the Recording of a Change; Copy of Notification of Transmittal of International Preliminary Examination Report.

LAW OFFICES OF  
 CHRISTENSEN O'CONNOR  
 JOHNSON KINDNESS<sup>SM</sup>  
 1420 Fifth Avenue  
 Suite 2800  
 Seattle, Washington 98101  
 (206) 682-8100

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|   |              |              |         |                                     |    |
|---|--------------|--------------|---------|-------------------------------------|----|
| <u>X</u> 21. The following fees are submitted:..<br><b>BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5):</b><br><br>Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... \$1,040<br><br>International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO.... \$890<br><br>International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO.....\$740<br><br>International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4)..... \$710<br><br>International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$100 |              |              |         | <b>CALCULATIONS</b><br>PTO USE ONLY |    |
| <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b> \$890   |              |              |         |                                     |    |
| Surcharge of \$130 for furnishing the oath or declaration later than ____ 20<br>30 months from the earliest claimed priority date (37 CFR 1.492(e))   |              |              |         | \$-                                 |    |
| CLAIMS  | NUMBER FILED | NUMBER EXTRA | RATE    |                                     |    |
| Total claims  | 19 - 20 =    | 0            | X \$18  | \$-                                 |    |
| Independent claims  | 4 - 3 =      | 1            | X \$84  | \$84                                |    |
| MULTIPLE DEPENDENT CLAIMS(S) (if applicable)  |              |              | + \$280 | \$280                               |    |
| <b>TOTAL OF ABOVE CALCULATIONS =</b>  |              |              |         | \$1,254                             |    |
| ____ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.  |              |              |         | \$-                                 |    |
| <b>SUBTOTAL =</b>   |              |              |         | \$1,254                             |    |
| Processing fee of \$130 for furnishing the English translation later than ____ 20 ____ 30 months from the earliest claimed priority date (37 CFR 1.492(f)) +  |              |              |         | \$                                  |    |
| <b>TOTAL NATIONAL FEE =</b>   |              |              |         | \$1,254                             |    |
| Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) \$40 per property  |              |              |         | \$                                  |    |
| <b>TOTAL FEES ENCLOSED =</b>  |              |              |         | \$1,254                             |    |
|   |              |              |         | Amount to be: refunded              | \$ |
|   |              |              |         | charged                             | \$ |

LAW OFFICES OF  
 CHRISTENSEN O'CONNOR  
 JOHNSON KINDNESS<sup>SM</sup>  
 1420 Fifth Avenue  
 Suite 2800  
 Seattle, Washington 98101  
 (206) 682-8100

- X   a. A check in the amount of \$1,254 covering the above fees is enclosed. Check No. 133973.
- b. Please charge my Deposit Account No.        in the amount of \$        to cover the above fees. A duplicate copy of this sheet is enclosed.
- X   c. The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 03-1740. A duplicate copy of this sheet is enclosed.

SEND ALL CORRESPONDENCE TO:

Lee E. Johnson  
CHRISTENSEN O'CONNOR JOHNSON KINDNESS<sup>PLLC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, WA 98101

Respectfully submitted,

CHRISTENSEN O'CONNOR  
JOHNSON KINDNESS<sup>PLLC</sup>



Lee E. Johnson  
Direct Dial No. 206.695.1701  
E-Mail Address: lee@cojk.com

**EXPRESS MAIL CERTIFICATE**

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Date of Deposit November 30, 2001

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on the date indicated above and is addressed to the U.S. Patent and Trademark Office, Box PCT, P.O. Box 2327, Arlington, VA 22202.

Yvette Lovett

(Typed or printed name of person mailing paper or fee)

(Signature of person mailing paper or fee)

LEJ/PAS:lsj

LAW OFFICES OF  
CHRISTENSEN O'CONNOR  
JOHNSON KINDNESS<sup>PLLC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
(206) 682-8100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Peter Edmund Reuben MUCCI;  
Abubakr Salem BAHAI; Patrick  
Alexander Bree JAMES; James  
Robert BALLARD

Attorney Docket No. BARK-1-18326

Int'l Application No: PCT/GB00/02159

Int'l Filing Date: 14 June 2000

U.S. Application Serial No: --

Priority Date Claimed: 14 June 1999

Filed: Concurrently Herewith

Examiner: --

Title: SOLAR TILE ASSEMBLY

PRELIMINARY AMENDMENT

TO THE COMMISSIONER FOR PATENTS:

Please enter the following Preliminary Amendment for the above-identified patent application, which is the contemporaneously filed United States national application corresponding to International application No. PCT/GB00/02159, as follows:

In the Specification:

Amend the specification by inserting the following after the title: --This is a United States national stage application of International application No. PCT/GB00/02159, filed June 14, 2000, the benefit of the filing date of which is hereby claimed under 35 U.S.C. § 120, which in turn claims the benefit of United Kingdom application No. 9913705.1, filed June 14, 1999, the benefit of the filing date of which is hereby claimed under 35 U.S.C. § 119.--

REMARKS

If there are any questions, the Examiner is invited to telephone applicant's attorney at the number listed below.

Respectfully submitted,

CHRISTENSEN O'CONNOR  
JOHNSON KINDNESS<sup>PLLC</sup>



Lee E. Johnson  
Direct Dial No. 206.695.1701  
E-Mail Address: lee@cojk.com

LEJ/PAS:lsj

SOLAR TILE ASSEMBLY

The present invention relates to a solar tile assembly and is concerned particularly with a two part solar roofing tile and a method for providing electrical connection between the respective parts of the two part solar roofing tile.

It is known to use solar panels comprising photovoltaic modules that may be placed onto the exterior of a building or replace the existing roof tiles. Examples of such photovoltaic modules are described in US 5590495, US 5112408 and EP 0710806. The photovoltaic modules systems normally comprise a plurality of solar panels that are electrically connected to form a circuit. The solar panels may require routine maintenance that necessitates the removal of one or more of the solar panels.

According to a first aspect of the present invention there is provided a solar tile assembly comprising a removable outer panel that comprises photovoltaic means and a first electrical connector, and an inner support structure that comprises a second electrical connector, the arrangement being such that in use an electrical connection between the first electrical connector and the second electrical connector is achieved by bringing together the outer panel and the inner support structure.

The electrical connection between the first electrical connector and the second electrical connector is preferably broken by the removal of the outer panel from the inner support structure.

Preferably, the outer panel is slidably attached to the inner support structure by attachment means comprising a channel section formed to receive an attachment element.

Preferably, the outer panel comprises the attachment element and the inner support structure is formed with the channel for receiving and retaining the attachment element of the outer panel.

- 5 The outer panel conveniently comprises a pair of attachment elements and the inner support structure is formed with a pair of channels for receiving and retaining the attachment elements of the outer panel.

- 10 The electrical connection between the first electrical connector and the second electrical connector is preferably broken by sliding the outer panel in a direction that is substantially parallel to plain of outermost surface of the outer panel.

Preferably the outer panel is removed from the inner support structure by first sliding the outer panel in a direction that is substantially parallel to plain of outermost surface of the outer panel and then lifting the outer panel in a direction perpendicular to the direction of the slide direction.

- 15 In use the inner support structure can be attached to the outer surface of a structure such as a building. If necessary a damaged outer panel can be easily removed from the solar tile assembly whilst still leaving the inner support structure fixed to the building. A new outer panel can then replace the damaged outer panel. Also, the outer panel and the inner  
20 support structure can be easily inspected by removing the outer panel.

The inner support structure preferably comprises an electrical junction box comprising the second electrical connector.

- 25 The electrical junction box of the inner support structure preferably comprises an electrical input terminal and an electrical output terminal, the arrangement being such that the electrical input terminal and the

electrical output terminal provide electrical communication between corresponding solar tile assemblies. In use the photovoltaic means of the respective solar assemblies generate electrical energy and there may be an electrical network provided between the plurality of solar tile assemblies.

It is preferable that the outer panel comprises an electrical junction box formed with the first electrical connector, the arrangement being such that in the assembled state of the solar tile assembly the first connector and the second connector provide electrical communication between the two electrical junction boxes.

The solar tile assemblies may be conveniently fixed to roof battens of a conventional roof structure and may replace the roofing tiles.

According to an embodiment of the first invention the support structure comprises means for providing electrical connections between adjacent solar tile assemblies.

The means for providing electrical connections between adjacent solar tile assemblies preferably comprises an electrical connector on opposite sides of the support structure.

According to a second aspect of the present invention there is provided a removable solar tile comprising photovoltaic means and an electrical connector, the arrangement being such that in use an electrical connection between the electrical connector of the removable solar tile and a second electrical connector of an inner support structure is achieved by the bringing together of the outer panel and the inner support structure.



According to a third aspect of the present invention there is provided an inner support structure for a removable tile comprising photovoltaic means, the inner support structure comprising an electrical connector, the arrangement being such that in use an electrical connection between the  
5 electrical connector of the inner support structure and an electrical connector of the removable tile is achieved by the bringing together of the removable tile and the inner support structure.

According to a fourth aspect of the present invention there is provided a method for providing an electrical connection for a solar tile assembly  
10 comprising a removable outer panel that comprises photovoltaic means and a first electrical connector, and an inner support structure that comprises a second electrical connector, the method comprises sliding the outer panel towards the inner support structure in a direction substantially parallel to the plane of the outer panel until the first  
15 electrical connector contacts the second electrical connector.

Preferably the electrical connection between the respective parts of the solar tile assembly is broken by sliding the outer panel in the opposite direction.

The invention may include any combination of the features or limitations  
20 referred to herein.

The invention can be put into practice in various ways, but an embodiment will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 is an isometric view of a solar tile assembly in a closed  
25 assembled condition;

Figure 2 is an isometric view of the solar tile assembly shown in Figure 1 and shows the assembly in a partially open condition;

Figure 3 is an isometric view of the solar tile assembly shown in Figure 1 and shows the outer panel separated from the inner support frame;

Figure 4 is an isometric view of the solar tile assembly shown in Figure 1 and shows the outer panel removed from the inner support frame; and

Figure 5 is an isometric view of the solar tile assembly shown in Figure 1 and shows more detail of a variable gauge clip, more detail of the outer panel structure and three partial cut-away sections of the outer panel.

With reference to the Figures 1 to 5, a solar tile assembly 1A comprises a removable rectangular outer panel 1 that comprises ten photovoltaic cells 3 disposed on the outermost surface thereof, and a substantially rectangular inner support structure 2. The photovoltaic cells 3 cover the lower portion of the outer panel 1. Any suitable photovoltaic means may be used for the solar tile assembly.

The outer panel 1 is secured to the inner support structure 2 using two fasteners 5a, 5b disposed at the front end of the solar tile assembly 1A. The fasteners 5a, 5b may typically be quarter or half turn captive fasteners. These types of fasteners have the added advantage of being retained by the outer panel 1 during assembly/disassembly processes.

The inner support structure 2 comprises a framework at one of which there is formed a lower stepped interlockable section 4. In use the

interlockable section 4 is disposed under a portion of an adjacent tile assembly, as is well known in the art of roof tile design. The inner support structure 2 is formed with three sets of holes 6. These holes 6 allow fixing nails or screws to be used to attach the inner structure 2 to roof tiling battens located underneath the inner structure 2. For certain roof designs no fixing nails or screws will be needed to hold the tile assembly 1A onto the roof. Disposed within the frame of the support structure 2 there is an electrical junction box 7. The inner support structure 2 comprises two parallel end members 7a, 7b (shown in Figures 3 to 5). Formed within each of the respective end members 7a, 7b there are respective slide channels 8a, 8b. At one end of the slide channel 8a there is formed a cutaway access port 9a. At the corresponding end of the slide channel 8b (not shown) there is formed a cutaway access port 9b.

The outer panel 1 comprises a pair of attachment elements 17a, 17b fixed to the inner surface of the outer panel 1 (see Figure 5). The attachment elements 17a, 17b are a triangular wedge shape. A heel portion 17c extends from each of the respective vertical faces of the wedge shapes. The attachment elements 17a, 17b are shaped to be received by the access ports 9a, 9b.

Also formed in the inner support structure 2 there are two substantially parallel channels 10 (shown in Figures 4 and 5). At one end of each channel 10 there is provided an access port 10a, 10b. Each port 10a, 10b has a greater width than the width of the remaining portions of the respective channels 10. The ports 10a, 10b provide access to the channels 10 for two variable gauge clips 11a, 11b.

It will be appreciated by the skilled person in the art that the channels 10 may be used in place of the slide channels 8a, 8b. Channels 10 can

operate to perform the function of channels 8a, 8b by comprising two sets of slide fixtures, one set being attached to the outer panel 1.

Should added retention for the solar tile assembly be required, for example in high winds, the clips 11a, 11b may slide along the channels 10 and are used to fix the outer panel 1 to an outer panel of an adjacent solar panel assembly located below.

The electrical junction box 7 of the inner support structure 2 comprises a pair of electrical connectors 13, an electrical output lead 14 and an electrical input connector 15. The outer panel 1 comprises an electrical junction box 19 that comprises a pair of electrical connectors 19a. In the assembled closed condition of the solar tile assembly 1A (as shown in Figure 1) the electrical connectors 13 are in electrical contact with the electrical connectors 19a.

To disassemble the solar tile assembly 1A the outer panel 1 is first slid in a direction Z and this causes a break in the electrical connection between the connectors 13 and the connectors 19a. The outer panel 1 is slid in the direction Z until the attachment elements 17a, 17b abut the respective lowermost ends of the channels 10. The outer panel 1 will stay in this position without sliding completely off the support structure 2 (as shown in Figure 2). In order to separate the outer panel 1 from the inner support structure 2 the outer panel 1 is moved back a small distance in the opposite direction to direction Z until the attachment elements 17a, 17b align with the respective access ports 9a, 9b. The outer panel 1 can then be lifted away from the inner support structure 2 (as shown in Figure 3).

When the solar tile assembly 1A is reassembled and the outer panel 1 is slid back up into position, the inwardly-extending lip 20 on the front

underside of the outer panel 1 fits under a recess 12 that is formed in the lowermost edge of the inner support structure 2 so providing secure anchorage against high wind.

5 The outer panel 1 is constructed typically of two planar sheets of material (see Figure 5). The uppermost sheet is a transparent material 22a that permits sunlight to reach the photovoltaic elements. In the embodiment shown, the uppermost sheet 22a is larger on three sides than the lowermost sheet 22b and all the fixing arrangements are mounted underneath and inside this area. Hence, no joints exist which could  
10 cause water ingress when exposed to the weather. The materials that may be used for the construction of the parts of the solar tile assembly 1A include metallic or non-metallic including plastics, glass, metal and ceramics/clay/cement.

15 The underside of the inner support structure 2 has location points to allow it to be easily positioned on the roof of a building and also to retain it in position whilst fixing down. The variable gauge clips 11a, 11b may be used to fix the outer panel 1 to a tile assembly located in a row below, should added retention be required for example in high wind speed areas.

20 The electrical connection between the outer panel 1 and the inner support structure 2 of the solar tile assembly 1A is made as the outer panel 1 is assembled onto the inner support structure 2. The electrical connection between the outer panel 1 and the inner support structure 2 of the solar tile assembly 1A is broken as the outer panel 1 is disassembled from the  
25 inner support structure 2.

It will be noted by those skilled in the art that electrical connection between the outer panel 1 and the inner support structure 2 can be broken

without the complete separation of the parts because the outer panel 1 has a sliding arrangement with the inner support structure 2.

When the solar tile assembly 1A is assembled, the electrical connection between the connectors 13 and the connectors 19a is retained by use of fasteners 5a, 5b located on the front edge of the outer panel 1. When the fasteners 5a, 5b are undone and outer panel 1 is released the electrical connection will be broken as the outer panel 1 slides in direction Z. When the outer panel 1 stops at the lower part of the channels 10 the junction box 7 will be exposed, therefore allowing access to all necessary electrical components.

Flying leads 14 may be used to connect adjacent solar tile assemblies together to complete a circuit. Fixed connections 16 may also be used on the sides of the inner support structure 2 such that as a solar tile assembly is positioned adjacent to another solar tile assembly, an electrical connection can be made because the two parts of the connector 16 (male and female) are integral with the parts of adjacent tiles assemblies.

As a row of tile assemblies is completed in the horizontal plane and the next row started, a cable would normally have to run from the end of the last row along the roof to the start of the second row. This uses a considerable amount of cable and therefore incurs electrical losses. An alternative arrangement may be made where the wiring of the connections is reversed in alternate rows. The end tile assembly can then be directly connected with a short wire to the next row above or below. In order to distinguish between the tile assemblies with the two types of wiring, the inner support structure 2 of the tile assembly may be colour coded so that during assembly it is easy to lay alternative rows with the correct wiring arrangement.

The dimensions of the solar panel assembly 1A can be made to correspond with the dimensions of conventional roof tiles. Hence, the solar tile assembly can be easily fitted onto an existing roof. The roof may be partially covered by an array of solar tile assemblies and partially  
5 covered by conventional roof tiles. Due to the construction and configuration of the solar tile assembly 1A, the outer panel 1 of an assembly 1A can be removed from the array of assemblies without disturbing the other assemblies.

When there is an array of assemblies, the upper portion 40 of the outer  
10 panel 1 that is not formed with photovoltaic cells 3 because this area is normally covered by a lower portion of an upper adjacent solar tile assembly.

It will be appreciated that the solar tile assembly can be attached to any suitable structure outside or inside a building.

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## CLAIMS

1. A solar tile assembly comprising a removable outer panel (1) that comprises photovoltaic means (3) and a first electrical connector (19a), and an inner support structure (2) that comprises a second electrical  
5 connector (13), the arrangement being such that in use an electrical connection between the first electrical connector (19a) and the second electrical connector (13) is achieved by bringing together the outer panel (1) and the inner support structure (2).
2. A solar tile assembly as claimed in claim 1, wherein the electrical  
10 connection between the first electrical connector and the second electrical connector is broken by the removal of the outer panel from the inner support structure.
3. A solar tile assembly as claimed in claim 1 or claim 2, wherein the  
15 outer panel is slidably attached to the inner support structure by attachment means comprising a channel section (10) formed to receive an attachment element (17a, 17b).
4. A solar tile assembly as claimed in claim 3, wherein the outer  
panel (2) comprises the attachment element (17a, 17b) and the inner  
20 support structure is formed with the channel (10) for receiving and retaining the attachment element of the outer panel.
5. A solar tile assembly as claimed in claim 3, wherein the outer  
panel comprises a pair of attachment elements (17a, 17b) and the inner  
support structure is formed with a pair of channels (10) for receiving and  
retaining the attachment elements of the outer panel.



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6. A solar tile assembly as claimed in claim 1, wherein the electrical connection between the first electrical connector and the second electrical connector is broken by sliding the outer panel in a direction that is substantially parallel to plane of outermost surface of the outer panel.
7. A solar tile assembly as claimed in any one of claims 1 to 6, wherein the outer panel is removed from the inner support structure by first sliding the outer panel in a direction that is substantially parallel to plane of the outermost surface of the outer panel and then lifting the outer panel in a direction perpendicular to the direction of the slide direction.
8. A solar tile assembly as claimed in any one of the preceding claims, wherein, in use, the inner support structure can be attached to the outer surface of a structure such as a building or attached to an independent support structure inside or outside a building.
9. A solar tile assembly as claimed in any one of the preceding claims, wherein the inner support structure comprises an electrical junction box (7) that comprises the second electrical connector (13).
10. A solar tile assembly as claimed in claim 9, wherein the electrical junction box of the inner support structure comprises an electrical input terminal (15) and an electrical output terminal (14), the arrangement being such that the electrical input terminal and the electrical output terminal provide electrical communication between corresponding solar tile assemblies.
11. A solar tile assembly as claimed in claim 9 or claim 10, wherein the outer panel comprises an electrical junction box formed with the first electrical connector, the arrangement being such that in the assembled

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state of the solar tile assembly the first connector and the second connector provide electrical communication between the two electrical junction boxes.

12. A solar tile assembly as claimed in any one of the preceding claims, wherein the support structure comprises means (16) for providing electrical connections between adjacent solar tile assemblies.

13. A solar tile assembly as claimed in claim 12, wherein the means for providing electrical connections between adjacent solar tile assemblies comprises an electrical connector (16) on opposite sides of the support structure.

14. A removable solar tile comprising photovoltaic means (3) and an electrical connector (19a), the arrangement being such that in use an electrical connection between the electrical connector of the removable solar tile and a second electrical connector (13) of an inner support structure (12) is achieved by bringing together the outer panel and the inner support structure.

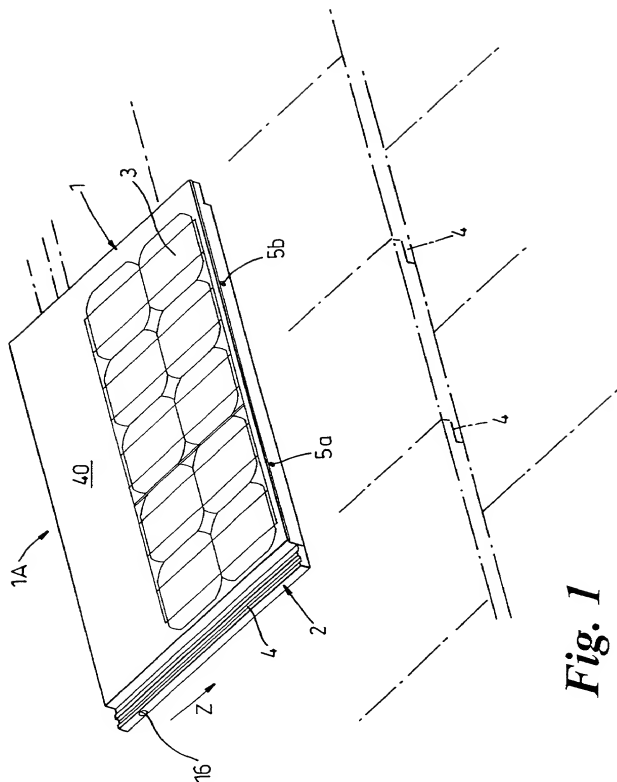
15. An inner support structure for a removable tile that comprises photovoltaic means, the inner support structure comprising an electrical connector (13), the arrangement being such that in use an electrical connection between the electrical connector (13) of the inner support structure and an electrical connector (19a) of the removable tile (1) is achieved by bringing together the removable tile and the inner support structure.

16. A method for providing an electrical connection for a solar tile assembly comprising a removable outer panel (1) that comprises photovoltaic means (3) and a first electrical connector (19a), and an inner

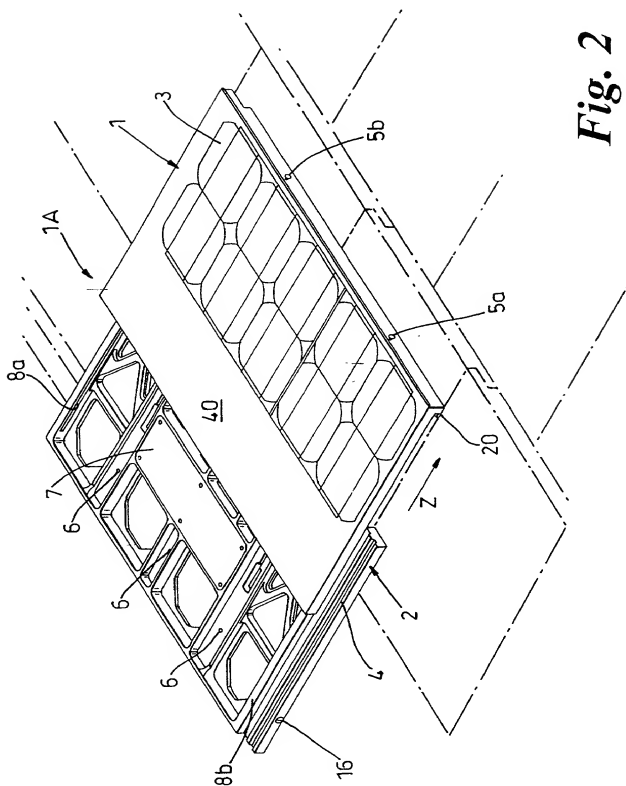
ART 34 AMDT

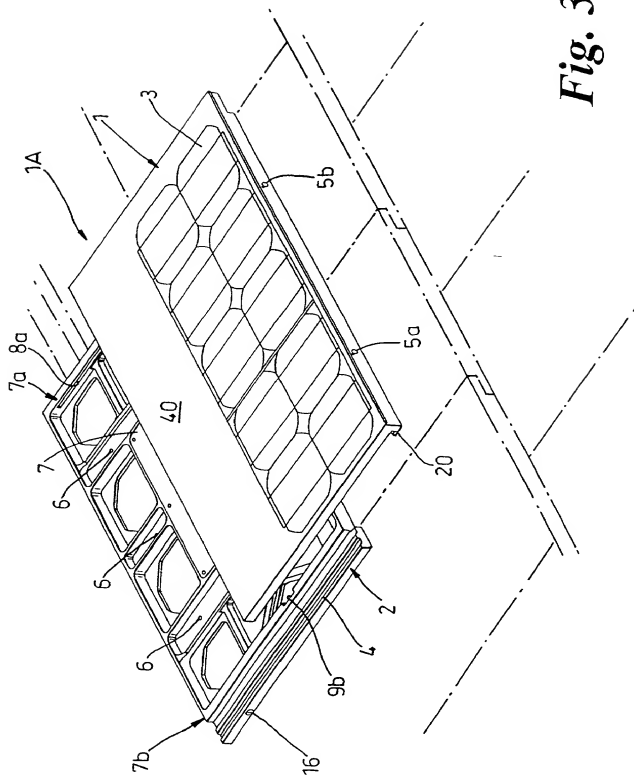
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- support structure (2) that comprises a second electrical connector (13), the method comprising sliding the outer panel towards the inner support structure in a direction substantially parallel to the plane of the outer panel until the first electrical connector (19a) contacts the second electrical connector (13).
- 5



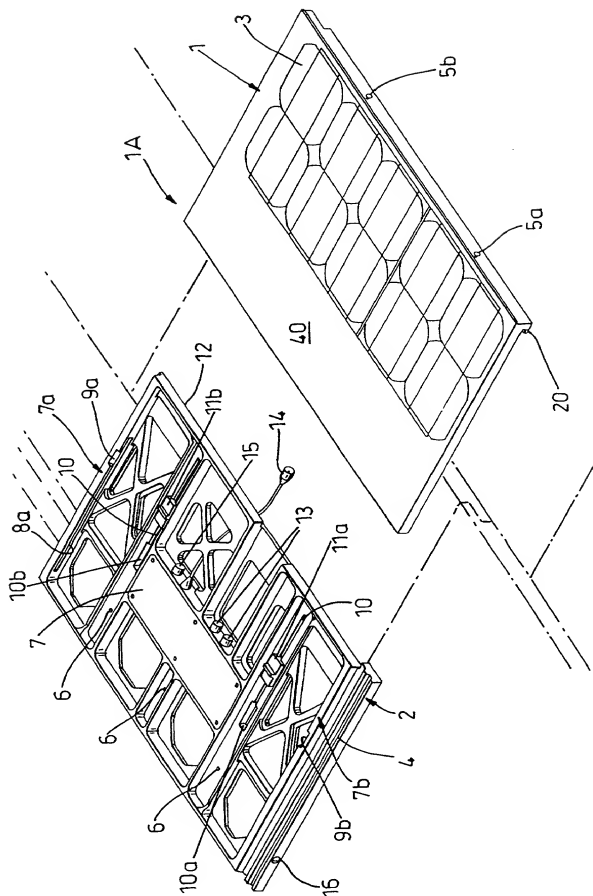
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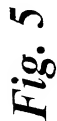
**Fig. 2**



**Fig. 3**

4/5

*Fig. 4*





10 Rec'd PCT/PTO 26 MAR 2002 #5

Attorney Docket No. BARK118326

COMBINED DECLARATION AND POWER OF ATTORNEY  
IN PATENT APPLICATION

As a below-named inventor, I hereby declare that:

my residence, post office address, and citizenship are as stated below next to my name;

I believe that I am an original, first, and joint inventor of the subject matter that is claimed and for which patent is sought on the invention entitled SOLAR TILE ASSEMBLY, the specification of which was filed on November 30, 2001, as United States Patent Application No. 09/980,471 and was amended on November 30, 2001.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(c), of any foreign application(s) for patent listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

## Prior Foreign Application(s):

| Number    | Country       | Day/Month/Year Filed | Priority Claimed<br>Yes/No |
|-----------|---------------|----------------------|----------------------------|
| 9913705.1 | Great Britain | 14 June 1999         | Yes                        |

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(d), of any inventor's certificate listed below. I declare that, upon investigation, I am satisfied that to the best of my knowledge, when filing the application for the inventor's certificate I had the option to file an application for either a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority: NONE

## Prior Foreign Inventor's Certificate(s):

| Number | Country | Day/Month/Year Filed | Priority Claimed<br>Yes/No |
|--------|---------|----------------------|----------------------------|
|--------|---------|----------------------|----------------------------|

I hereby claim the benefit under Title 35, United States Code, Section 119(e), of any United States provisional application(s) listed below: NONE

## Provisional Application(s):

09930471.032602

Application No.Filing Date

I hereby claim the benefit under Title 35, United States Code, Section 120, of any United States application(s) or PCT international application(s) designating the United States listed below:

Prior U.S. Application(s) or PCT International Application(s):

| <u>Application No.</u> | <u>Filing Date (D/M/Y)</u> | <u>Status</u> |
|------------------------|----------------------------|---------------|
| PCT/GB00/02159         | 14 June 2000               | pending       |

I hereby appoint the following attorneys and/or agents to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith: Bruce E. O'Connor, Reg. No. 24,849; Lee E. Johnson, Reg. No. 22,946; Gary S. Kindness, Reg. No. 22,178; James W. Anable, Reg. No. 26,827; James R. Uhlir, Reg. No. 25,096; Jerald E. Nagae, Reg. No. 29,418; Dennis K. Shelton, Reg. No. 26,997; Jeffrey M. Sakoi, Reg. No. 32,059; Ward Brown, Reg. No. 28,400; Robert J. Carlson, Reg. No. 35,472; Rodney C. Tullett, Reg. No. 34,034; Daiva K. Tautvydas, Reg. No. 36,077; Mary L. Culic, Reg. No. 40,574; Julie C. VanDerZanden, Reg. No. 38,105; George E. Renzoni, Ph.D., Reg. No. 37,919; Philip P. Mann, Reg. No. 30,960; George S. Farber, Reg. No. 41,497; Kevan L. Morgan, Reg. No. 42,015; and John D. Denkenberger, Reg. No. 44,060; and the firm of Christensen O'Connor Johnson Kindness<sup>PLLC</sup>. Address all telephone calls to Lee E. Johnson at telephone No. 206.695.1701.

Address all correspondence to:

**Customer No. 26389**

CHRISTENSEN O'CONNOR JOHNSON KINDNESS<sup>PLLC</sup>  
1420 Fifth Avenue, Suite 2800  
Seattle, WA 98101

I hereby further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

1-00  
 Full Name of Inventor Peter E.R. MUCCI Citizenship Great Britain  
 Residence The Old Bakery, Parsonage Lane, Durley, Southampton SO32 2AD, England GB2  
 Post Office Address same as above  
 Inventor's Signature Peter Mucci Date 06/03/02

2-00  
 Full Name of Inventor Abubakar S. BAHAI Citizenship Great Britain  
 Residence 5A Northlands Gardens, Southampton, SO15 2NL, England GB2  
 Post Office Address same as above  
 Inventor's Signature Abubakar Baha Date 06/03/02

3-00  
 Full Name of Inventor Patrick A.B. JAMES Citizenship Great Britain  
 Residence 4 Osprey Close, Marchwood, Southampton, SO40 4XJ, England GB2  
 Post Office Address same as above  
 Inventor's Signature PAB James Date 06/03/02

4-00  
 Full Name of Inventor James R. BALLARD Citizenship Great Britain  
 Residence 46, SOMERSET ROAD, PORTSWOOD, SOUTHAMPTON, SO17 2AA, ENGLAND  
110 Cedar Road, Portswood, Southampton, SO14 6TH, England  
 Post Office Address same as above GB2  
 Inventor's Signature James Ballard Date 6/3/02

LEJ/PAS:lsj

00930471.032502